

What is the relationship between self-diet monitoring and body weight in adults?

Conclusion

Strong evidence shows that for adults who need or desire to lose weight, or who are maintaining body weight following weight loss, self-monitoring of food intake improves outcomes.

Grade: Strong

Overall strength of the available supporting evidence: Strong; Moderate; Limited; Expert Opinion Only; Grade not assignable For additional information regarding how to interpret grades [click here](#).

Evidence Summary Overview

The literature review identified seven studies: Six randomized controlled trials (RCTs) (Adachi, 2007; Carels, 2008; Helsel, 2007; Lowe, 2008; Tate, 2001; Wylie-Rosett, 2001) and one non-randomized controlled trial (Yon, 2007). In the majority of studies, diet self-monitoring included keeping a daily record of food consumed, with a focus on monitoring calorie intake. The studies were conducted in the US and Japan. Studies ranged in sample size from 42 (Helsel, 2007) to 588 (Wylie-Rosett, 2001), and all seven studies included both men and women. Six studies found a positive relationship between diet self-monitoring and weight loss in adults (Adachi, 2007; Carels, 2008; Helsel, 2007; Tate, 2001; Wylie-Rosett, 2001; Yon, 2007) only one study found no relationship between diet self-monitoring and weight loss in adults (Lowe, 2008).

Evidence Summary Paragraphs

Randomized Controlled Trials (6)

Adachi Y et al, 2007 (neutral quality) conducted an RCT in Japan to determine the long-term effects of a one-month behavior weight control program assisted by computer tailored advice. Subjects were randomly assigned to one of four treatment groups: 1) Full Kenkou-tatsujin program and additional six-month self-monitoring of target behaviors and weight; 2) Full Kenkou-tatsujin program; 3) Kenkou-tatsujin booklet reading and seven-month self-monitoring of weight and walking steps measured by a pedometer; 4) Kenkou-tatsujin booklet reading only. The self-monitoring component of the intervention consisted of daily weight-monitoring and targeted behavior monitoring every day for a month. At baseline, one, three and seven months, body weights were measured in all participants, and dietary habits were measured using questionnaires, including a 15-item brief lifestyle questionnaire. The final sample included 198 subjects (mean age = 46 years, mean body mass index (BMI) = 26kg/m²). Those who followed the Kenkou-tatsunji program, with and without self-monitoring, had greater reductions in BMI and weight compared to the other groups at one month (P<0.05). The Kenkou-tatsunji with self-monitoring group also had great reductions in BMI and weight at months three and seven (P<0.01). The authors concluded that that Kenkou program resulted in significant weight loss, especially when paired with a self-monitoring component.

Carels RA et al, 2008 (positive quality) conducted an RCT in the US to examine the relationship between self-monitoring adherence and weight loss. Subjects were enrolled in a 14-week weight

loss intervention, and were instructed to complete daily diaries of food intake and exercise to monitor energy intake and energy expenditure. Weight and height were measured, and BMI calculated at baseline and 14-weeks. The final sample included 44 subjects (mean age = 46 years; mean BMI = 36kg/m²). Greater self-monitoring throughout the program was significantly associated with greater overall weight loss ($P<0.0001$). Self-monitoring throughout the program accounted for 25% of the variance in overall weight loss. Individuals who lost 5% of their body weight during the intervention self-monitored more than twice as many days as did individuals who did not lose 5% of their body weight ($P<0.001$). The authors concluded that self-monitoring of energy intake and expenditure were significantly, positively associated with weight loss.

Helsel DL et al, 2007 (neutral quality) conducted an RCT in the US to determine whether different methods of self-monitoring of eating and exercise behaviors affects body weight in overweight adults. Subjects participated in a 16-week correspondence-based behavioral weight-loss program and were assigned to either the Detailed Self-Monitoring Group (instructed to self-monitor eating and exercise behaviors using a weekly diary) or the Transitional Self-Monitoring Group (instructed to self-monitor using the detailed approach for weeks one to eight, and then transition to an abbreviated eating and exercise diary from weeks nine to 16). The final sample included 42 subjects. There was a significant decrease in body weight from zero to 16 weeks in the detailed self-monitoring group (-7.5 ± 5.3 kg) and the transitional self-monitoring group (-7.6 ± 5.5 kg) ($P=0.001$), with no significant (NS) difference between the groups. There were significant correlation coefficients between change in body weight and number of diaries returned ($R=0.53$, $P<0.03$). The authors concluded that the self-monitoring process is important for facilitating weight loss and change in eating and physical activity behaviors.

Lowe MR et al, 2008 (neutral quality) conducted an RCT in the US to compare group weight loss interventions, aimed at improving weight loss maintenance, on body weight. The weight loss phase was eight weeks in length, and was based on an Optifast meal replacement-supplemented, 1,100 kcal per day diet. The weight maintenance phase was 14 weeks in length, and subjects were randomly assigned to three groups during this phase: The Control group received basic instruction about nutrition and behavioral and lifestyle modifications; the Enhanced Food Monitoring Accuracy (EFMA) group received training on accurate food reporting and practiced food monitoring daily; and the Reduced Energy Density Eating (REDE) group was instructed on a reduced energy density diet in addition to the training provided to EFMA subjects. Assessments were conducted at baseline, post-weight loss (eight weeks), post-intervention (22 weeks), and at six- and 18-month follow-ups. The final sample included 103 subjects ($N=35$ in the Control group, $N=35$ in the EFMA group and $N=33$ in the REDE group). For the EFMA and Control groups, there was a significant correlation between the ratio of reported calories eaten per day divided by current body weight (an assessment of reporting accuracy) and better weight control ($P<0.05$), but not for REDE subjects. For all subjects combined, there was no significant correlation between the ratio of reported calories eaten per day divided by current body weight and better weight control. The authors conclude that these results do not provide consistent support for the hypothesis that training in food monitoring accuracy changed calorie intake or weight.

Tate DF et al, 2001 (positive quality) conducted an RCT in the US to determine whether a structured Internet behavioral weight loss program produces greater initial weight loss and changes in waist circumference than a weight loss education Web site. Subjects were assigned to a six-month weight loss program of either Internet education or Internet behavior therapy. The Internet behavior therapy program included weekly online submission of self-monitoring diaries. Body weight was measured at zero, three and six months. The final sample included 65 subjects (ages 10 to 60 years, BMI from 25 to 36kg/m²). The Internet behavior therapy group lost more weight (-4.0 ± 2.8 kg at three months and -4.1 ± 4.5 kg at six months) than the Internet education group

(-1.7±2.7kg at three months and -1.6±3.3kg at six months) (P=0.005). The authors concluded that individuals who followed a structured behavioral treatment program that included daily self-monitoring of dietary intake had better weight loss than those who did not follow a structured program.



Wylie-Rosett J et al, 2001 (positive quality) conducted an RCT in the US to evaluate the costs and effects of incremental components of a weight-loss program. Subjects were participants in a one-year weight-loss trial that focused on lifestyle and behavioral modifications, and included a self-monitoring component. Weight was assessed at baseline and at one year. The final sample included 588 subjects (82% female; mean age = 52 years; mean BMI = 36kg/m²). Increased self-monitoring was associated with greater weight loss (R=0.25, P=0.0001), as was “feeling successful with self-monitoring” (R=0.25, P=0.0001). The authors concluded that more self-monitoring was associated with greater weight loss in adults.



Non-randomized Controlled Trials (1)


Yon BA et al, 2007 (positive quality) conducted a non-randomized controlled trial in the US to investigate whether the use of a personal digital assistant (PDA) for dietary self-monitoring would improve self-monitoring frequency and subsequent weight loss at the end of a 24-week behavioral weight loss program. The PDA self-monitoring group was given a PDA with a food database and self-monitoring software, and instructed to self-monitor their food intake and exercise. Control group participants were provided with small paper weekly diaries and a book with calorie listings of foods to record their food intake and exercise. Existing data from a previous 24-week behavioral weight loss program were used for the control data. Body weight, height and BMI were measured at baseline and at six months. Adherence to self-monitoring was assessed weekly by tracking the number of food diaries submitted. The final sample included 149 subjects (56 in the PDA group, 93 in the control group). There were NS differences in weight loss between groups for those subjects who completed all six-month measures. Dietary self-monitoring was strongly associated with weight loss outcomes in both groups, with 32% of the weight loss explained by the frequency of dietary self-monitoring [F(1,144) = 72.45, P<0.001]; however, the relationship was not different between the two groups. The authors concluded that these results support the relationship between dietary self-monitoring and weight loss; however, the use of a PDA did not improve that relationship.

 [View table in new window](#)

Author, Year, Study Design, Class, Rating	Participants	Methods	Outcomes
Adachi Y, Sato C et al, 2007 Study Design: Randomized controlled trial Class: A	N=198 subjects. Mean age: 46 years. Mean BMI: 26 kg/m ² . Location: Japan.	Subjects were randomly assigned to one of four treatment groups: 1) Full Kenkou-tatsujin program and additional six months of self-monitoring of target behaviors and weight; 2) Full Kenkou-tatsujin program; 3) Kenkou-tatsujin booklet reading and seven months of	Those who followed the Kenkou-tatsunji program, with and without self-monitoring, had ↑reductions in BMI and weight, compared to the

<p>Rating: </p>		<p>self-monitoring of weight and walking steps measured by a pedometer; and 4) Kenkou-tatsujin booklet reading only.</p> <p>The self-monitoring component of the intervention consisted of daily weight-monitoring and targeted behavior monitoring every day for a month.</p> <p>At baseline, one, three and seven months, body weights were measured in all participants, and dietary habits were measured using questionnaires, including a 15-item brief lifestyle questionnaire.</p>	<p>other groups at one month ($P<0.05$).</p> <p>The Kenkou-tatsunji with self-monitoring group also had \uparrow reductions in BMI and weight at months three and seven ($P<0.01$).</p>
<p>Carels R, Young K et al, 2008</p> <p>Study Design: Randomized controlled trial</p> <p>Class: A</p> <p>Rating: </p>	<p>N=44 subjects.</p> <p>Mean age: 46 years.</p> <p>Mean BMI: 36kg/m².</p> <p>Location: United States.</p>	<p>Subjects were enrolled in a 14-week weight loss intervention, and were instructed to complete daily diaries of food intake and exercise to monitor energy intake and energy expenditure.</p> <p>Weight and height were measured and BMI calculated at baseline and 14 weeks.</p>	<p>Greater self-monitoring throughout the program was significantly associated with \uparrow overall weight loss ($P<0.0001$).</p> <p>Self-monitoring throughout the program accounted for 25% of the variance in overall weight loss.</p> <p>Individuals who lost 5% of their body weight during the intervention self-monitored more than twice as many days, as did individuals who did not \downarrow 5% of their body weight ($P<0.001$).</p>

<p>Helsel DL, Jakicic Jm, Otto AD, 2007</p> <p>Study Design: Randomized Controlled Trial</p> <p>Class: A</p> <p>Rating: </p>	<p>N=42 subjects.</p> <p>Location: United States.</p>	<p>Subjects participated in a 16-week correspondence-based behavioral weight-loss program and were assigned to either the Detailed Self-Monitoring Group (instructed to self-monitor eating and exercise behaviors using a weekly diary) or the Transitional Self-Monitoring Group (instructed to self-monitor using the detailed approach for weeks one to eight, and then transition to an abbreviated eating and exercise diary during weeks nine to 16).</p>	<p>There was a significant ↓ in body weight from zero to 16 weeks in the detailed self-monitoring group ($-7.5 \pm 5.3\text{kg}$) and the transitional self-monitoring group ($-7.6 \pm 5.5\text{kg}$) ($P=0.001$), with NS difference between the groups.</p> <p>There were significant correlation coefficients between Δ in body weight and number of diaries returned ($R=0.53$, $P<0.03$).</p>
<p>Lowe MR, Tappe KA et al, 2008</p> <p>Study Design: Randomized Controlled Trial</p> <p>Class: A</p> <p>Rating: </p>	<p>N=103 subjects (N=35 Control group; N=35 EFMA group; N=33 REDE group).</p> <p>Location: United States.</p>	<p>The weight loss phase was eight weeks in length and was based on an Optifast meal replacement-supplemented, 1,100kcal-per-day diet. The weight maintenance phase was 14 weeks in length, and subjects were randomly assigned to three groups during this phase: The Control group received basic instruction about nutrition and behavioral and lifestyle modifications; the Enhanced Food Monitoring Accuracy (EFMA) group received training on accurate food reporting and practiced food monitoring daily; and the Reduced Energy Density Eating (REDE) group was instructed on a ↓ energy density diet in addition to the training provided to EFMA subjects.</p>	<p>For the EFMA and Control groups, there was a significant correlation between the ratio of reported calories eaten per day divided by current body weight (an assessment of reporting accuracy) and better weight control ($P<0.05$), but not for REDE subjects.</p> <p>For all subjects combined, there was NS correlation between the ratio</p>


		Assessments were conducted at baseline, post-weight loss (eight weeks), post-intervention (22 weeks), and at six- and 18-month follow-ups.	of reported calories eaten per day divided by current body weight and better weight control.
<p>Tate DF, Wing RR et al, 2001</p> <p>Study Design: Randomized Controlled Trial</p> <p>Class: A</p> <p>Rating: </p>	<p>N=65 subjects.</p> <p>Age: 10 to 60 years.</p> <p>BMI: 25 to 36 kg/m².</p> <p>Location: United States.</p>	<p>Subjects were assigned to a six-month weight loss program of either Internet education or Internet behavior therapy. The Internet behavior therapy program included weekly online submission of self-monitoring diaries.</p> <p>Body weight was measured at zero, three and six months.</p>	<p>The Internet behavior therapy group lost more weight (-4.0±2.8kg at three months and -4.1±4.5kg at six months) than the Internet education group (-1.7±2.7kg at three months and -1.6±3.3kg at six months) (P=0.005).</p>
<p>Wylie-Rosett J, et.al. J Am Diet Assoc. 2001</p> <p>Study Design: RCT</p> <p>Class: A</p> <p>Rating: </p>	<p>N=588 subjects (82% female).</p> <p>Mean age: 52 years.</p> <p>Mean BMI: 36kg/m².</p> <p>Location: United States.</p>	<p>Subjects were participants in a one-year weight-loss trial that focused on lifestyle and behavioral modifications, and included a self-monitoring component.</p> <p>Weight was assessed at baseline and one year.</p>	<p>↑ self-monitoring was associated with greater weight loss (R=0.25, P=0.0001), as was “feeling successful with self-monitoring” (R=0.25, P=0.0001).</p>
<p>Yon BA, Johnson RK et al, 2007</p> <p>Study Design: Non-Randomized Controlled Trial</p> <p>Class: C</p> <p>Rating: </p>	<p>N=149 subjects (56 PDA group; 93 control group).</p> <p>Location: United States.</p>	<p>The PDA self-monitoring group was given a PDA with a food database and self-monitoring software and instructed to self-monitor their food intake and exercise.</p> <p>Control group participants were provided with small paper weekly diaries and a book with calorie listings of foods to record their food intake and exercise. Existing data from a previous 24-week behavioral weight loss program</p>	<p>NS differences in weight loss between groups for those subjects who completed all six-month measures.</p> <p>Dietary self-monitoring was strongly associated with weight loss outcomes in both</p>


	<p>were used for the control data.</p> <p>Body weight, height and BMI were measured at baseline and at six months.</p> <p>Adherence to self-monitoring was assessed weekly by tracking the number of food diaries submitted.</p>	<p>groups, with 32% of the weight loss was explained by the frequency of dietary self-monitoring [$F(1,144) = 72.45$, $P < 0.001$]; however, the relationship was not different between the two groups.</p>
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Research Design and Implementation Rating Summary


For a summary of the Research Design and Implementation Rating results, [click here](#).


Worksheets


 [Adachi Y, Sato C, Yamatsu K, Ito S, Adachi K, Yamagami T. A randomized controlled trial on the long-term effects of a 1-month behavioral weight control program assisted by computer tailored advice. *Behav Res Ther*. 2007 Mar; 45 \(3\): 459-470.](#)

 [Carels RA, Young KM, Coit C, Clayton AM, Spencer A, Hobbs M. Can following the caloric restriction recommendations from the Dietary Guidelines for Americans help individuals lose weight? *Eat Behav*. 2008 Aug; 9 \(3\): 328-335. Epub 2008 Jan 4.](#)

 [Helsel DL, Jakicic JM, Otto AD. Comparison of techniques for self-monitoring eating and exercise behaviors on weight loss in a correspondence-based intervention. *J Am Diet Assoc*. 2007 Oct; 107\(10\): 1,807-1,810.](#)

 [Lowe MR, Tappe KA, Annunziato RA, Riddell LJ, Coletta MC, Crerand CE, Didie ER, Ochner CN, McKinney S. The effect of training in reduced energy density eating and food self-monitoring accuracy on weight loss maintenance. *Obesity* \(Silver Spring\). 2008 Sep; 16\(9\): 2,016-2,023.](#)

 [Tate DF, Wing RR, Winett RA. Using Internet technology to deliver a behavioral weight-loss program. *JAMA*. 2001 Mar 7; 285 \(9\): 1,172-1,177.](#)

 [Wylie-Rosett J, Swencionis C, Ginsberg M, Cimino C, Wassertheil-Smoller S, Caban A, Segal-Isaacson CJ, Martin T, Lewis J. Computerized weight loss intervention optimizes staff time: the clinical and cost results of a controlled clinical trial conducted in a managed care setting. *J Am Diet Assoc*. 2001; 101:1155-1162.](#)

 [Yon BA, Johnson RK, Harvey-Berino J, Gold BC, Howard AB. Personal digital assistants are comparable to traditional diaries for dietary self-monitoring during a weight-loss program. *J Behav Med*. 2007 Apr; 30 \(2\): 165-175. Epub 2007 Jan 10.](#)

